

**REMARKS**

Claims 1-11 are pending in the application.

In the Office Action, the Examiner rejected claims 1 and 7-9 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Number 6,597,807 to Watkins et al.

Claims 2-4 and 6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Watkins et al. in view of U.S. Patent Number 6,396,946 to Sogawa.

Claim 5 was rejected under 35 U.S.C. §103(a) as being unpatentable over Watkins et al. in view of Sogawa and further in view of U.S. Patent Number 6,640,130 to Freeman et al.

Claims 10 and 11 were rejected under 35 U.S.C. §103(a) as being unpatentable over Watkins et al. in view of U.S. Patent Number 5,129,010 to Higuchi et al.

In view of the arguments that follow, Applicants respectfully traverse the Examiner's rejection of claims 1-11.

**Information Disclosure Statement**

The Examiner has acknowledged receipt of the Information Disclosure Statement filed on April 6, 2001. The Examiner is requested to initial and return a copy of the Form PTO-1449 with the next official communication.

**Rejection Under 35 U.S.C. §102(e)**

The Examiner rejected claims 1 and 7-9 under 35 U.S.C. §102(e) as being anticipated by Watkins et al. The rejection is respectfully traversed.

Applicants' claim 1 recites an image synthesis apparatus, comprising: a right infrared camera and a left infrared camera; a right visible light camera and a left visible light camera; and a first image synthesis processing device for synthesizing data output from the right infrared camera and the left infrared camera and data output from the right visible light camera and the left visible light camera so that a three-dimensional thermal image and three-dimensional visible light image are observed by an observer as overlapping each other.

Applicants respectfully submit that Watkins et al. do not teach or suggest all the claimed limitations of the present invention. Among other things, the reference's data output generated by the apparatus for performing a stereoscopic method does not produce a perception or image analogous to the perception or image generated by the claimed image synthesis apparatus, wherein "a first image synthesis processing device for synthesizing data output from the right infrared camera and the left infrared camera and data output from the right visible light camera and the left visible light camera so that a three-dimensional thermal image and three-dimensional visible light image are observed by an observer as overlapping each other," as recited in claim 1.

Watkins et al. disclose a left stereo sensor and a right stereo sensor of a stereoscopic method for enhancing and displaying data so an observer can distinguish targets in a cluttered and noisy environment, such as combat, using the human visual system. The stereoscopic method displays fused sensory data as color stereo images

obtained from the left and right stereo sensor. A Red-Green-Blue color code is assigned to left and right stereo signals obtained from the left and right stereo sensors in order to enhance object recognition and perception, and to display the Red-Green-Blue color code in a color stereoscopic image.

Applicants disclose “a first image synthesis processing device” that synthesizes “data output from” a “right infrared camera” and a “left infrared camera,” and “data output from” a “right visible light camera” and a “left visible light camera.” A “three-dimensional thermal image” from the right and left infrared camera, and a “three-dimensional visible light image” from the right and left visible light camera are “observed by an observer as overlapping each other. The left and right stereo sensor of Watkins et al. that detects left and right stereo signals in order to enhance an object recognition and perception is not analogous to a “data output from the right infrared camera and the left infrared camera and data output from the left visible light camera and the right visible light camera.” Moreover, the color stereoscopic image that includes Red-Green-Blue color code that is assigned to the left and right stereo signals of Watkins et al. is not analogous to “a three-dimensional thermal image and a three-dimensional visible light image” that are “observed by an observer as overlapping each other.”

In view of the foregoing reasons, Applicants submit that claim 1 is not taught or suggested by Watkins et al. and the rejection of claim 1 should be withdrawn.

Applicants also submit that Watkins et al. do not teach or suggest “a second image synthesis processing device for synthesizing right infrared image data output from the right infrared camera and left infrared image data output from the left infrared camera so as to generate three-dimensional thermal image data; a third image synthesis processing device

for synthesizing right visible light image data output from the right visible light camera and left visible light image data output from the left visible light camera so as to generate three-dimensional visible light image data; and a fourth image synthesis processing device for synthesizing the three-dimensional thermal image data and the three-dimensional overall image data,” as recited in claim 7.

Again, Watkins et al. disclose color stereo image signals obtained from the left stereo sensor and right stereo sensor. The Red-Green-Blue color coded stereo image is overlaid on the stereo signal to maintain visual color cues and visible images in order to enhance object recognition and perception, and to display the Red-Green-Blue color code in a color stereoscopic image. Watkins et al. further disclose that the left and right stereo sensors give two different perspectives of sensing an image in any three dimensional space to produce a left and right stereo signal. The image being sensed is in a three dimensional space and the left and right stereo signals from the left and right stereo sensors of Watkins et al. is not analogous to a three dimensional image. Moreover, the two different perspectives, obtained from the left and right stereo sensor, in a three dimensional space of Watkins et al. is not analogous to generating “three-dimensional thermal image data” from “the right infrared image data output from the right infrared camera and left infrared image data output from the left infrared camera;” “three-dimensional visible light image data” from “the right visible light image data output from the right visible light camera and left visible light image data output from the left visible light camera;” and “three-dimensional overall image data” from “the three-dimensional thermal image data and the three-dimensional visible light image data.”

In view of the foregoing reasons, Applicants submit that claim 7 is not taught or suggested by Watkins et al. and the rejection of claim 7 should be withdrawn.

Applicants submit that Watkins et al. do not disclose or teach that “three-dimensional thermal image data includes a plurality of temperature levels, and a plurality of color tones are respectively assigned to the plurality of temperature levels,” as recited in claim 8.

Watkins et al. disclose a Red-Green-Blue sensor fusion display at three-quarters and a standard visible display at one-quarter display intensity where items such as road signs and traffic signs with color are muted by the Red-Green-Blue fusion overlay. Watkins et al. further disclose an animal navigation hazard that is seen from the Red-Green-Blue fusion data overlay that highlights spatial frequency components on an animal. The animal navigation hazard of Watkins et al. that highlights spatial frequency components of an animal that is not visible to the naked eye is not analogous to a “three-dimensional thermal image data” that “includes a plurality of temperature levels, and a plurality of color tones” that are assigned “to the plurality of temperature levels.”

In view of the foregoing reasons, Applicants submit that claim 8 is not taught or suggested by Watkins et al. and the rejection of claim 8 should be withdrawn.

Applicants also submit that Watkins et al. do not disclose or teach that “three-dimensional overall image data includes three-dimensional coordinate data, and the three-dimensional overall image data is converted into two-dimensional data by transforming the three-dimensional coordinate data into two-dimensional coordinate data projected onto a prescribed plane in a three-dimensional coordinate space,” as recited in claim 9.

Watkins et al. disclose a method of processing signals from a plurality of sensors representing different spectral views of the same three dimensional scene that includes

obtaining first left and right stereo signals from a pair of left and right sensors sensitive in a first spectral range which includes assigning a first Red-Green-Blue color code to the first left and right stereo signals to enhance object recognition and perception. Watkins et al. also disclose that signals are obtained from a second left and right sensor pairs that are sensitive in the visible range, and a third left and right sensor pairs sensitive in a third spectral range different from the first and second spectral ranges. The first, second, and third left and right sensor pairs representing different spectral views of the same three dimensional scene of Watkins et al. is not analogous to a “three-dimensional overall image data” that “includes three-dimensional coordinate data.” Moreover, obtaining image signals in a three-dimensional scene of Watkins et al. is not analogous to “three-dimensional overall image data” that “is converted into two dimensional data by transforming the three-dimensional coordinate data into two-dimensional coordinate data projected onto a prescribed plane in a three-dimensional coordinate space.”

In view of the foregoing reasons, Applicants submit that claim 9 is not taught or suggested by Watkins et al. and the rejection of claim 9 should be withdrawn.

#### **Rejection Under 35 U.S.C. §103(a)**

The Examiner rejected claims 2-4 and 6 under 35 U.S.C. §103(a) as being unpatentable over Watkins et al. in view of Sogawa. The rejection is respectfully traversed.

Applicants respectfully submit that claims 2-4 and 6 are allowable for at least the same reasons stated above with regards to the respective base claim 1. Therefore, the rejection of claims 2-4 and 6 should be withdrawn.

The Examiner rejected claim 5 under 35 U.S.C §103(a) as being unpatentable over Watkins et al. in view of Sogawa and further in view of Freeman et al. The rejection is respectfully traversed.

Applicants submit that claim 5 is allowable for at least the same reasons stated above with regard to the respective base claim 1. Therefore, the rejection of claim 5 should be withdrawn.

The Examiner rejected claims 10 and 11 under 35 U.S.C. §103(a) as being unpatentable over Watkins et al. in view of Higuchi et al. The rejection is respectfully traversed.

Applicants' claim 10 recites an image synthesis apparatus, comprising: a slit device including a plurality of slits; an infrared directing device for directing infrared toward a subject through the slit device; a plurality of infrared cameras provided in a direction substantially perpendicular to a direction in which the infrared is directed toward the subject; and an image synthesis processing device for synthesizing a plurality of thermal image data output from the plurality of infrared cameras so as to generate three-dimensional thermal image data.

The Examiner alleged that Watkins et al. disclose a plurality of infrared cameras provided in a direction substantially perpendicular to a direction in which the infrared is directed toward a subject, an image synthesis processing device for synthesizing a plurality of thermal image data output from the plurality of infrared cameras so as to generate three-dimensional thermal image data. The Examiner admitted that Watkins et al. do not disclose using a slit device including a plurality of slits and an infrared directing device for directing

infrared toward a subject through the slit device. To cure the deficiencies of Watkins et al., the Examiner alleged that Higuchi et al. disclose a slit device and an infrared directive device for directing infrared toward a subject through the slit device. According to the Examiner, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the infrared disclosed by Watkins et al. to include a slit device as taught by Higuchi et al. because it is a well known directing device routinely utilized in three-dimensional imaging.

Applicants respectfully submit that neither Watkins et al. nor Higuchi et al., taken singly or in combination (assuming these teachings may be combined, which Applicants do not admit), teach or suggest all the claimed limitations of the present invention. Among other things, the references do not disclose “an image synthesis processing device for synthesizing a plurality of thermal image data output from the plurality of infrared cameras so as to generate three-dimensional thermal image data,” as recited in claim 10.

Watkins et al. disclose a method of processing signals from a plurality of sensors representing different spectral views of the same three dimensional scene that includes obtaining first left and right stereo signals from a pair of left and right sensors sensitive in a first spectral range which includes assigning a first Red-Green-Blue color code to the first left and right stereo signals to enhance object recognition and perception. Watkins et al. also disclose that signals are obtained from a second left and right sensor pairs that are sensitive in the visible range, and a third left and right sensor pairs sensitive in a third spectral range different from the first and second spectral ranges. The first, second and third left and right sensor pairs representing different spectral views of the same three dimensional scene of Watkins et al. is not analogous to generating “three-dimensional



thermal image data.” Moreover, the first, second, and third left and right sensor pairs that generate left and right stereo signals of Watkins et al. is not analogous to “synthesizing a plurality of thermal image data output from the plurality of infrared cameras so as to generate three-dimensional thermal image data.”

Higuchi et al. does not cure the deficiencies of Watkins et al. Higuchi et al. disclose a system for measuring three-dimensional shapes and dimensions by a slit light from a slit light source of an imaging unit, which reflects a surface shape, flushness and gap in a specified region of an object. The system of Higuchi et al. generates the measurements of the shapes and dimensions of an object. However, the three dimensional shape and dimension measurements by a slit light of Higuchi et al. is not analogous to “synthesizing a plurality of thermal image data output from the plurality of infrared cameras.”

Applicants also respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine the reference teachings. Second, the proposed modification of the prior art must have had a reasonable expectation of succeeding, as determined from the vantage point of a skill artisan at the time the invention was made. Third, the prior art references, when combined, must teach or suggest all the claim limitations. See M.P.E. P. §2143.

Applicants respectfully submit that the asserted combination of Watkins et al. and Higuchi et al. fail to establish a *prima facie* case of obviousness of independent claim 10, or any claim depending therefrom. In view of the foregoing reasons, Applicants submit that

claim 10 is not taught or suggested by Watkins et al. in view of Higuchi et al., and the rejection of claim 10 should be withdrawn. Claim 11 is allowable for at least the reasons stated above with regards to the respective base claim 10.

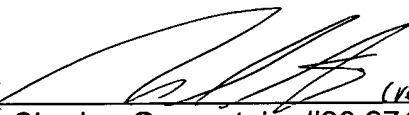
Conclusion

In view of the foregoing remarks, Applicants respectfully request the reconsideration and reexamination of this application and the timely allowance of the pending claims.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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